



US Army Corps  
of Engineers  
New England District

# Update Report for Massachusetts



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## Mission

The missions of the New England District, U.S. Army Corps of Engineers include flood prevention and control, emergency response for natural disasters and national emergencies, environmental remediation and restoration, natural resource management, stream bank and shoreline protection, navigation maintenance and improvement, support to military facilities and installations, and engineering and construction support to other federal agencies. The six New England states cover 66,000 square miles and have 6,100 miles of coastline, 11 deep water ports, 102 recreational and small commercial harbors, 13 major river basins, and thousands of miles of navigable rivers and streams. The district operates and maintains 31 dams, 2 hurricane barriers and the Cape Cod Canal. We employ about 550 professional civilian employees, with about 400 stationed at our headquarters in Concord, Massachusetts. The other Corps of Engineers employees serve at Corps projects and offices throughout the region.

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## Flood Damage Reduction

**ROUGHANS POINT, REVERE, LYNN, SAUGUS and MALDEN (6th & 7th CDs)** - Construction on the Roughans Point Project began in October 1997 and is nearing completion. *The \$8.5 million coastal flood protection project will relieve the neighborhood from severe flooding like the Blizzard of 1978 and storms in 1991 and 1992. Authorized by the Water Resources Development Act of 1986, the federal project includes measures for stabilizing and improving existing sea-walls, placement of a new rock revetment to reduce wave runoff and storm overtopping and rehabilitation of an existing pump station.* The City of Revere and the Commonwealth's Department of Environmental Management are sponsors for the project. Construction of the revetment and seawalls was finished in November 1999. Construction activity is now turning to repairs to the existing pumping station (owned by the Commonwealth's Metropolitan District Commission) and other drainage improvements. *Rehabilitation of the station is to begin in May 2000, with completion scheduled for December 2000.*

**TOWN BROOK, BRAINTREE AND QUINCY (9th & 10th CD)** - The Water Resources Development Act of 1986 authorized federal flood protection consisting of Town River channel modifications near the Southern Artery in Quincy, a 12-foot-diameter deep rock relief

tunnel over 4,000 feet long under Quincy center, and reconstruction of the Old Quincy Dam in Braintree. This federal project is part of an overall flood control system for the Town Brook watershed in cooperation with the Commonwealth of Massachusetts. The total flood control project is estimated at over \$50 million, of which the Commonwealth's Metropolitan District Commission, as the sponsor, contributes 25 percent.

The flood protection works are being built in three phases. The first phase was constructed by P. Caliacco Corp. of Rockland, and included channel work and new culverts at the downstream end of Town Brook under the Southern Artery. Work on this \$3.3 million phase is complete. The second phase, which is the largest and involves construction of the tunnel under the business district in Quincy, was built by Kajima/Marra-Majestic (joint venture) of Pasadena, California, at a cost of \$24 million. Construction began in November 1993 and has been completed. The last phase is reconstruction of the Old Quincy Dam in Braintree. A \$8.7 million contract for this work was awarded on September 25, 1998, to D&C Contracting Co., Inc., of Rockland, Mass. The whole system is scheduled to be turned over to the MDC to own and operate in 2001.

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## Navigation

**ANDREWS RIVER, HARWICHPORT (10th CD)** – *The Harwich Harbormaster reported that shoaling had occurred in the six-foot deep, 75-foot-wide entrance channel. A hydrographic survey confirmed the shoaling and the need for dredging. Maintenance dredging by the government dredge CURRITUCK was performed in late July.*

**AUNT LYDIA'S COVE, CHATHAM (10th CD)** – *Maintenance dredging in the entrance channel with the Government dredge CURRITUCK began in early June and was completed in early July.*

**BOSTON HARBOR (8th, 9th, & 10th CDs)** – The Water Resources Development Act of 1990 authorized a navigation improvement project for Boston Harbor to increase the channel depth to 40 feet in the Mystic River and Reserve Channel and to 38 feet in the Chelsea River. The Massachusetts Port Authority is acting as the project sponsor and is providing the nonfederal cost sharing portion, amounting to 25% of the construction costs, with an additional 10% reimbursement to the federal government after construction. The total improvement project cost is estimated at \$14 million. An additional \$23 million was spent on maintenance dredging of material shoaled within the now existing channel depth. Construction was conducted by Great Lakes Dredge and Dock, Inc. The project used an innovated concept in disposing of silty material in deep confined disposal cells dredged below the existing channel and capped with clean sand. *The project dredging is scheduled to be completed by late summer, and final capping of the last of the confined aquatic disposal cells that have been used will be completed in August 2000.* Currently five out of eight confined aquatic disposal cells have been capped.

As work draws to a close on the 40-foot tributaries deepening project, the New England District and Massport have begun examining a proposal by Massport to deepen the major entrance channel and main ship channel through the harbor up to South Boston to 45 feet. A reconnaissance study began in December 1999. *A report was completed in July 2000 and submitted for approval to undertake detailed feasibility investigations.*

**CAPE COD CANAL (10th CD)** – A \$211,600 contract was awarded to AGM Marine Contractors, Inc., on September 14, 1999, for dredging about 6,000 cubic yards of material from a small area just seaward of Cleveland Ledge Light. The purpose of this work is to straighten the west approach, eliminating the need for maneuvering and improving navigation safety for commercial vessel traffic. The sand, gravel, and boulders removed from the area are being placed at the Buzzards

Bay Disposal Site. *Work was suspended in late December, should resume in September and be completed in October 2000.*

**CAPE COD CANAL EAST BREAKWATER (10th CD)** – A \$356,244 contract was awarded to Reagan Construction Corp. on August 19, 1999. The work includes placement of stone to restore to original dimensions of the structure which has been damaged by wave action. Also included in this contract is a Coast Guard funded effort to place a new concrete foundation to anchor a solar array which will provide power to the breakwater light. *Work was completed in July 2000.*

**CAPE COD CANAL BOURNE AND SAGAMORE BRIDGES (10th CD)** – A \$2,361,000 contract was awarded to Haskell Construction Co. on September 27, 1999. The work includes repairs to the concrete piers and abutments for both bridges. The work started in November 1999 and is scheduled to be completed in November 2000. A separate \$3,427,459 contract was awarded to MIG Corporation on March 31, 2000. The work includes deck repairs and repaving of the roadways of both bridges. The work will primarily be accomplished in 5 major phases of work during the spring and fall. The contract is scheduled for completion in the spring of 2002. A comprehensive traffic management plan will be in place so as to minimize impact to motorists using the bridges.

**CAPE COD CANAL RAILROAD BRIDGE (10th CD)** – The New England District and Massachusetts Executive Office of Transportation and Construction (EOTC) continue to coordinate the rehabilitation of the Cape Cod Canal railroad bridge. The project is expected to be accomplished in two phases. *Bids for Phase I, which includes steel repairs and painting requiring less than eight consecutive hours of shutdown time were opened July 6, with Odyssey Contracting the apparent low bidder with a bid of \$12.8 million.* Phase II would consist of all other items, including bearing and cable replacement, which require bridge outage greater than eight hours at any one time. Plans and specifications for the Phase 2 work will be prepared during the year 2000. *The railroad is primarily used to transport trash from the Cape to the mainland for disposal.*

**CHATHAM (STAGE) HARBOR (10th CD)** – *Maintenance dredging of the 10-foot-deep, 150-foot-wide entrance channel by the government-owned dredge CURRITUCK was performed in July.*

**CUTTYHUNK HARBOR (10th CD)** – *Maintenance dredging of the 10-foot-deep, 75-foot-wide entrance channel by the government-owned dredge CURRITUCK was completed in late April.*

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**GREEN HARBOR, MARSHFIELD (10th CD)** - *Maintenance dredging of the six- and eight-foot-deep, 100-foot-wide entrance channel was performed by the government-owned dredge CURRITUCK in May.*

**NEW BEDFORD & FAIRHAVEN HARBOR (4th CD)** – The New England District is assisting the Massachusetts Office of Coastal Zone Management in preparation of a Dredged Material Management Plan for maintenance dredging of the navigation channels in New Bedford and Fairhaven Harbor. A review of navigation traffic information has indicated that the shallow draft channels on the Fairhaven side of the harbor require maintenance dredging of about 70,000 cubic yards of shoal material. The deep draft channels serving the New Bedford waterfront would require dredging of about 1.3 million cubic yards to restore the authorized project dimensions; however navigation traffic projections offered by the city do not at this time demonstrate a need for dredging those areas. The state's study has examined the dredging needs of the Federal Navigation Project for New Bedford, and numerous state, municipal and private facility dredging needs for a 20 year period. A State Environmental Impact Report recommending potential disposal options for the disposal of dredged materials from New Bedford is expected to be published in late summer 2000. Following publication of the state report, the state and municipalities, with assistance from the New England District and other federal agencies, will determine what additional investigations and procedures are necessary to select and implement a long-term dredged material disposal plan for New Bedford and Fairhaven Harbor.

**PLYMOUTH LONG BEACH DIKE (10th CD)** - Plans and specifications are being prepared to restore Long Beach Dike to its authorized dimensions. This will require rebuilding a 2,000-foot-long section of the dike. Environmental constraints restrict work to fall and winter months to avoid interference with endangered bird nesting. The earliest that repairs could be initiated is the fall of 2001.

**SALEM HARBOR (6th CD)** – *The New England District has completed its analysis of biological test results on sediment samples from the main channel and Derby Wharf channel segments of the Federal Navigation Project at Salem Harbor. The Corps, in consultation with US EPA, has determined that the dredged material is suitable for open water disposal in Massachusetts Bay. As these materials were found suitable for ocean disposal, maintenance dredging of these federal project areas may proceed independently of the state's long-term dredged material management study. The earliest dredging could begin is 2003.*

The Corps is also assisting the Massachusetts Office of Coastal Zone Management in preparation of a Dredged Material Management Plan for materials to be dredged from the South River channel feature of the Federal Navigation Project, as well as numerous Municipal and private dredging projects, which may prove unsuitable for open water disposal. The State study is focused on securing disposal options, with sufficient capacity for a 20 year period, for dredged materials deemed unsuitable for unconfined open water disposal, and therefore requiring some means of confined disposal. A State Environmental Impact Report recommending potential options for the disposal of dredged materials from Salem Harbor has been deferred, pending resolution of harbor development issues by the City. Following publication of the state report, the state and municipalities, with assistance from the New England District and other Federal agencies, will determine what additional investigations and procedures are necessary to select and implement a long-term dredged material disposal plan for Salem Harbor.

**SESUIT HARBOR, DENNIS (10th CD)** – *The Dennis Harbormaster reported that a small amount of shoaling had occurred in the 6-foot-deep, 100-foot-wide entrance channel. A hydrographic survey confirmed the shoaling and the need for dredging. The government-owned dredge CURRITUCK performed maintenance dredging in July.*

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## **Shoreline/Streambank Protection**

**NORTH NANTASKET BEACH (10th CD)** - A Section 103 Detailed Project study to determine the feasibility of providing coastal storm damage protection to the 10,000-foot-long North Nantasket Beach in Hull is underway. The study is examining protection to backshore properties against flooding and wave attack. The local sponsor is the Massachusetts Department of Environmental Management. The \$220,000 study cost is being shared 50% from the Corps and 50% from the state and the Town of Hull. Both the state and the town requested additional engineering analysis on a locally preferred plan. *A contract was awarded for that additional work, and a revised draft report is expected to be completed in August 2000.*

**NANTASKET BEACH (MDC), HULL (10th CD)** - A draft Section 103 Hurricane and Storm Damage Prevention Detailed Project Report was completed in January 1997 documenting an investigation conducted in response to a request for assistance from the Metropolitan District Commission. The investigation examined potential solutions to coastal erosion and backshore flooding at the MDC's Nantasket Beach Reservation in Hull. Although the draft report was endorsed by the MDC, nonfederal funding to proceed with the project was not available at that time. *Earlier this year, the MDC requested that the report be finalized so that project approval for implementation could be pursued. The Corps worked with the MDC to complete project details. The MDC is now*



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pursuing financing for the project, which calls for ten-year protection by placement of 226,000 cubic yards of added beach fill at an estimated cost of \$4.9 million.

**NANTASKET SEAWALL (MDC), HULL (10th CD)** - The Metropolitan District Commission (MDC) has entered into an agreement to conduct necessary engineering and analysis for rehabilitation of the seawall along Nantasket Beach. This work, scheduled for completion in December 2000, will evaluate the status of existing structures, examine foundation conditions, and design, layout, cost and prepare for construction bid appropriate repairs. Also included in the work are efforts associated with environmental review and documenta-

tion. Completely financed by the MDC, construction is planned for 2001, pending state ability to finance.

**NORTH NASHUA RIVER, LANCASTER (3rd & 5th CDs)** - New England District has awarded a construction contract to provide riverbank erosion protection to portions of Lunenburg Road (Route 70) in Lancaster. The project is located along the left bank of the North Nashua River, adjacent to the existing Lancaster Local Protection Project (LPP). The local sponsor for the project is the Massachusetts Department of Environmental Management. The project will be cost-shared 65% federal and 35% by the local sponsor. The project is scheduled for completion during the summer of 2000 and will cost \$300,000.

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## Flood Plain Management Services

**HARDY POND BROOK, LEXINGTON (7th CD)** - We have been requested to investigate low impact methods of cleaning river channels of silt and sand, and to determine methods to keep sand out of rivers. A brief report, primarily based upon the relatively low-impact channel-cleaning work of Mosquito Control Projects, was sent to the Town in March 2000. The report describes channel cleaning equipment and the needs and reasons for such work.

**NORTHERN MASSACHUSETTS/NEW HAMPSHIRE HURRICANE EVACUATION STUDY** - This study is being conducted under a federally-funded program co-sponsored by the Corps of Engineers and the Federal

Emergency Management Agency. The objective of the program is to provide hurricane surge mapping and a technical data report from which the state and local communities can develop/update preparedness plans for hurricanes. Draft inundation maps for New Hampshire and the Massachusetts south shore communities were provided to the state and local communities, and draft inundation maps for the Massachusetts north shore communities were provided to the state and local communities in 1999. This information allows state and local officials to identify hurricane evacuation areas, and the population within those areas. *Final mapping products are scheduled for completion in the fall of 2000.*

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## Planning Assistance

**ASSABET RIVER TOTAL MAXIMUM DAILY LOADS STUDY ( 3rd, 4th and 5th CDs)** - The Massachusetts Department of Environmental Protection is cost-sharing water quality sampling, analysis and related tasks relevant to the determination of total maximum daily loads of nutrients to the Assabet River. Approximately \$170,000 of federal and state monies combined have been earmarked. Work began in July 1999. Contracts totalling \$146,000 have been awarded to date. Funds for additional Assabet River work are expected to be increased by up to another \$100,000 (\$50,000 from the state).

**BILLINGS CREEK COASTAL WETLAND STUDY (10th CD)** - Billings Creek Wetland is located in Quincy near the mouth of the Neponset River. This area was within the boundaries of the former Squantum Naval Air Station. Remnants of air station roadways, fill areas, and bunkers are still scattered within the marsh area. Past development in the area has resulted in alterations to marsh surface as well as changes in tidal flow to the site.

The goals of the study are to characterize existing tidal and vegetation conditions at the site and develop a plan

to improve the health of the wetland. The study will be conducted in two phases. Phase I will establish existing site conditions and include tide gage setup relative to NGVD, tidal monitoring, vegetation characterization, marsh elevation survey, and an identification of alternatives for further study in Phase II.

The local study sponsor is the City of Quincy. The study is being conducted under the Corps Planning Assistance to States Program and is cost shared 50/50. The study began in September 1999. *The Phase I draft report will be completed this summer.*

**CONNECTICUT RIVER WATERSHED WETLANDS RESTORATION STUDY (1st & 2nd CDs)** - The Massachusetts Executive Office of Environmental Affairs, Wetlands Restoration and Banking Program, has requested that the New England District conduct an analysis that would identify and evaluate potential wetland restoration sites in the Connecticut River watershed. Three sub-watersheds will be studied specifically: the two Mill Rivers and the Manhan River. This \$100,000 cost shared (50/50) study began in May 1999 and will be completed in the fall of 2000.

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**LAKE COMO RESTORATION STUDY (3rd CD)** - Lake Como is an urban lake located in the Ten Mile River watershed in the communities of Attleboro and North Attleboro. The lake is man-made and is the result of the impoundment of an unnamed stream, which flows to the Seven-Mile River in Attleboro. The lake consists of a main basin (about five acres in size and 1,050 feet in length) in Attleboro and a smaller west basin (about two acres in size and 800 feet in length) in North Attleboro. A local road, called Como Drive, separates the two basins. Flow between the two basins is through an 18-inch culvert under Como Drive. The lake outlet at the east end of the main basin consists of an overflow weir to a 24-inch culvert under U.S. Route One. A small tributary stream to the lake originates in North Attleboro near Cushman Drive and flows east to enter the west basin of the lake. This tributary is about 3,000 feet in length. The watershed area for the lake is estimated to be small, on the order of about 250 acres.

The main basin of the lake is considered to be very degraded by the Massachusetts Department of Environmental Protection (DEP), Division of Watershed Management. The west basin is extensively vegetated and shallow. Problems observed by the DEP at the main basin during the summer of 1997 include dense algae blooms and very dense aquatic plant cover. The goals of the study are to characterize the existing lake conditions and identify alternatives to restore the lake. One restoration objective is that the local communities of North Attleboro and Attleboro would like to increase the amount of open water in the main basin and the west basin for recreation and aesthetic purposes.

The study will be performed under a cost sharing agreement with the Massachusetts Department of Environmental Management. *The cost share agreement was signed in April 2000 and the study will be initiated in August 2000.*

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## Defense Environmental Restoration Program (DERP)

This Congressionally directed effort (PL 98-212) provides for expanded work in environmental restoration. It emphasizes the identification, investigation and prompt cleanup of hazardous and toxic waste; unexploded ordnance; and unsafe buildings, structures and debris at current and former military facilities.

A total of 327 formerly used Defense sites have been identified in Massachusetts. Investigations at 324 sites are now complete, including 206 where no work was found to be necessary. The three remaining sites, **Quabbin Bombing Range (1st CD)** and two Job Corps facilities in **Chicopee (2nd CD)**, will be scheduled in the future when funding priorities allow.

A project to demolish a large concrete dock and other structures at the **Hingham (10th CD)** Naval Ammunition Depot and the **Hingham (10th CD)** Naval Ammunition Depot Annex was awarded in June 1997 to J&W Construction for \$1,360,897. The contract was further modified in September 1997 for an additional \$1,713,695 to address all structures at the two sites that were eligible for building demolition. Work is ongoing and is about 99% complete.

*A \$148,124 contract has been awarded in June to Arthur D. Little, Inc., for a remedial investigation at the Former Burn Area at the **Hingham Naval Ammunition Depot Annex (Wampatuck State Park, 10th CD)**. It is scheduled for completion within a year. Additionally, a separate \$142,461 contract has been awarded to Nobis Engineering, Inc., for demolition of Building 55 and light ballast removal in Building 80. This work should be completed this fall.*

Investigation of the former **Westover AFB Job Corps Site in Chicopee (2nd CD)** is complete. No further action was recommended, based on the last round of sampling in compliance with Massachusetts regulations.

Remediation work, consisting of the installation of an air sparging system with soil vapor extraction and free product recovery, is continuing at the Lonczak Drive area of the **Westover Air Force Base in Chicopee (2nd CD)**. The area of contamination is greater than originally estimated, and further delineation is ongoing. *In the pump house #2 area, further site characterization will be performed this fall. After that is complete, an Activity and Use Limitation will be recommended to Massachusetts DEP. No remediation is contemplated.*

*Construction contracts totalling \$1,117,492 were awarded in 1998 to remove soil contamination and demolish the **Campbell School in Bourne (10th CD)** and work is now complete.*

Additional subsurface investigations were performed at the **East Boston (8th CD) Naval Fuel Annex**. The Phase II report was reviewed by the Corps and the Massachusetts Port Authority (Massport). The findings of the Phase II investigation shows more severe sediment contamination than previously expected. Additional sediment sampling and analyses will be completed in July 2000. Once this characterization is completed, remedial action alternatives will be developed in a Phase III report due in October 2000.

There are two sites associated with the former **Watertown Arsenal (8th CD)**. At the Watertown Mall site, a Phase II Comprehensive Site Assessment and

Radiological Risk Assessment (done in accordance with the Massachusetts Contingency Plan) were officially submitted to MA DEP and the Nuclear Regulatory Commission (NRC) for review in 1998. *At the request of the NRC, follow-up radiological sampling was done, and a draft risk assessment was received in July 2000. At the request of the Army Research Lab (ARL), this site will be removed from the ARL's radiological license by the NRC. At the General Services Administration property, a contract was awarded in June to HLA Environmental Services, Inc., for \$250,000 to perform additional surface water sampling, as well as an historical assessment of past radiological activities and site modeling.*

Limited funding for the demolition of Building 108 at the **Charlestown Navy Yard (8th CD)** has been received. The original demolition contract was suspended in FY97 due to unexpected site conditions. Due to reduced funding levels, demolition will be accomplished in phases over several years. *It is estimated that an additional \$3 to \$3.5 million will be needed to complete the demolition work.*

The Corps' Northwest Division has been authorized to enter into negotiations with potentially responsible parties concerning **Nike Site BO-15 in Beverly (6th CD)**, and **Air Force Plant #28 in Everett (8th CD)**. The negotiations will identify the levels of responsibility and cost sharing for cleanup among the parties.

The files for the Westover Bulk Petroleum, Oil and Lubricant (POL) Terminal and Salvage Yard in **Chicopee (2nd CD)** have been reviewed as part of our potentially responsible party investigation. Since contaminant information for either soil or groundwater is not available for the POL site, an assessment of both is planned this FY pending availability of funding. No further activities are planned for the Salvage Yard.

The U.S. Army Engineering and Support Center, Huntsville, completed the field work portion of the Engineering Evaluation/Cost Analysis of the former **Camp Wellfleet (10th CD)** in May 1998. New England District is involved with environmental, real estate and public affairs coordination. The draft Engineering Evaluation/Cost Analysis Report was submitted for public comment on September 16, 1999, and a public meeting was held on September 23, 1999. Draft responses to comments are complete and will be coordinated with the Massachusetts DEP. *Further work will be performed as funding and priorities allow.*

Work is about 50% complete on the \$6,000,000 remediation of soil and building interior surfaces at Building 105, **Charlestown Navy Yard (8th CD)**. A risk assessment addressing the final cleanup goals has been completed, and the results are being reviewed. Remediation will continue once EPA and MA DEP have

approved these cleanup standards and methods. Remediation is being coordinated with all state and federal agencies involved in historical preservation issues.

The Corps of Engineers and Raytheon are sharing the cost of an investigation at the **Former Lowell Ordnance Plant (5th CD)**. *The Phase II document and risk assessment were submitted by Raytheon in July and are currently being evaluated. Raytheon has requested an extension of time to submit the Phase III document from MA DEP.*

At the **Boston Naval Annex (9th CD)**, we are currently evaluating the status of the project with respect to compliance with the Massachusetts Contingency Plan (MCP). Once that has been completed, we will proceed to close out the site, consistent with the MCP.

Remedial construction projects are complete at:

#### **First District**

Westover Light Annex #2, **Granby**  
Westover Light Annex #3, **Amherst**  
New Salem Gap Filler Annex, **New Salem**  
Westover Remote Site, **Shutesbury**

#### **Second District**

Springfield Armory-Rail, **Springfield**  
Chapman Valve Exp, **Springfield**  
Westover AFB, **Chicopee**  
Westover AFB, **Ludlow**  
**Hadley Nike Site**

#### **Third District**

**Swansea Nike Site**

#### **Fourth District**

**Nike Site PR-19, Rehoboth**

#### **Sixth District**

**Beverly Nike Site**  
**Danvers/Topsfield Nike Site**  
Fort Ruckman, **Nahant**  
Nike Site BO-17, **Nahant**  
Nike Site BO-84, **Burlington**  
Ipswich Data Collection Lab Annex, **Ipswich**  
Fort Ruckman, **Nahant**

#### **Seventh District**

**Lincoln Nike Site**  
Nike Site BO-03, **Reading/Wakefield**

#### **Eighth District**

Fort Strong, **Winthrop**  
**East Boston Naval Fuel Annex**  
**East Boston Naval Fuel Annex**  
**Charlestown Navy Yard**

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**Charlestown Navy Yard**, Tank Removal  
Fort Warren, **Boston**

**Eighth & Ninth Districts**  
Fort Standish, **Boston**

**Ninth District**  
**South Boston** Naval Annex  
**Needham** Nike Site

**Tenth District**  
Camp Candoit, **Cotuit**  
**Martha's Vineyard** Airport  
Hingham School Property, **Hingham**  
Fort Andrews, **Hull**  
**Hingham** Army Reserve Training Center  
**Hingham** Naval Ammunition Depot  
**Hingham** Nike Site

**Martha's Vineyard** South Beach  
**Hingham/Cohasset** Naval Ammunition Depot  
**Camp Wellfleet**  
Nike Site BO-37, **Quincy**  
Nike Site BO-40, **Quincy**  
Fort Revere, **Hull**  
**Hingham** Naval Ammunition Depot Annex  
Misham Point Electronics Research Annex,  
**Dartmouth**  
Squantum Electronics Research Center, **Quincy**  
Strawberry Point Fire Control Station, **Scituate**  
Point Allerton Military Reservation, **Hull**  
Point Allerton Surface Craft Detector Site, **Hull**  
Holly Hill Radar Station, **Marshfield**  
**Nantucket** NAVFAC, Tom Nevers Naval Base  
**Hingham** Naval Ammunition Depot  
Camp Edwards, **Sandwich**

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## Work for the Environmental Protection Agency

The New England District is the Corps of Engineers' total support agency for the Environmental Protection Agency's Region I (New England) program for those federal-lead projects assigned to the Corps by EPA. This includes responsibility for design, construction execution, and some operation and maintenance of remediation projects. In addition, the District is providing technical assistance upon request to Region I for other federal-lead projects assigned by EPA to private firms, as well as for some Potential Responsible Party (PRP) remediation.

### Superfund Assistance

**ASHLAND (5th CD)** – The Nyanza site consists of four operable units (OU) to address contaminated soil (OU#1), groundwater (OU#2), continuing source areas (OU#3), and the Sudbury River (OU#4). The Corps of Engineers has supported EPA at this site since the late 1980s with activity currently underway in support of OU#2 and OU#3.

EPA is reevaluating the OU#2 Risk Assessment and has requested technical assistance from the New England District in this endeavor. We are currently monitoring the groundwater plume through regularly scheduled sampling events. *The next sampling event is scheduled for October.* We are also conducting a screening level ecological risk assessment that addresses the impact of the contaminated groundwater plume entering the river. *This effort will continue through the calendar year.*

Operable Unit III involves the remediation of the four continuing contamination source areas to the Sudbury River. A Record of Decision was signed in 1993, which outlined the removal of the mercury-contaminated sediments from the four source areas and disposal under the Operable Unit I cap. The New England District com-

pleted the Final Remedial Design in 1998 and construction activities began in spring 1999. The Eastern Wetland and Trolley Brook were completed last year. *The remaining two source areas have been remediated this summer. Cap construction will be completed this fall with only minor wetland restoration work to be completed next spring.* The overall project is estimated to cost \$10 million.

**HOLBROOK (10th CD)** – The New England District's support to the Baird & McGuire site began in 1990 and has involved the construction of a groundwater treatment facility, the excavation and incineration of approximately 248,000 tons of contaminated material and the subsequent restoration of the site, and the excavation and incineration of contaminated sediments from the Cochato River. We currently operate the groundwater treatment plant through a contract with the Professional Services Group (PSI) at an annual cost of approximately \$4 million.

**LOWELL (5th CD)** – The Silresim Site is a 4.5 acre area located in an industrial area of Lowell. The New England District designed and constructed a groundwater treatment facility at this site. We have operated this facility since November 1995 and will continue in this role for the foreseeable future. We have also installed a soil vapor extraction system on a portion of the site. This system was shut off in December 1999 after approximately one year of operation. EPA is reevaluating the approach for remediating this site and has asked the New England District to collect additional site data, revise the risk assessment, evaluate other technologies and revise the site's Record of Decision. *We will initiate additional site investigations in October.*



**NEW BEDFORD (4th CD)** - We completed dredging the Hot Spot portion of the New Bedford Harbor Superfund Site in 1995. This five-acre area contained 14,000 cubic yards of highly contaminated sediments which were stored in a confined disposal facility (CDF) located on the New Bedford shoreline just north of Coggeshall Street. We, through our contractor, maintained the CDF and adjacent facilities while EPA evaluated various treatment and disposal alternatives. EPA, through its Record of Decision signed in April 1999, determined that the Hot Spot sediments would be dewatered and then hauled to a commercially approved landfill. Construction work began in August 1999 and the last load of contaminated sediment left the site in mid-April 2000. This phase of the work cost approximately \$8 million.

EPA signed the Record of Decision for remediating the remainder of the harbor in September 1998. The project will involve dredging 450,000 cubic yards of contaminated sediments from the estuary and lower harbor with containment of the sediments in Confined Disposal Facilities (CDFs) which will be constructed along the New Bedford shoreline. In addition, the project includes constructing facilities to treat the water pumped from the harbor during dredging operations, placing interim and final caps or covers on the CDFs, and relocating utilities, including ComElectric's power cables which cross the harbor. Design activities on this operable unit are well underway. *An on-site study focusing on dredging, water treatment and dewatering technologies will get underway in August. Relocation of ComElectric's power cables is currently suspended, and alternate methods to relocate the cables is being investigated. Construction of CDF "C" and relocation of the Combined Sewer Outfall are currently planned for late fall start subject to the availability of real estate needed for the project work. Dredging work for remediation will begin upon completion of Confined Disposal Facility "C." Construction operations and dredging will take an estimated ten years to construct.*

**NORWOOD (9th CD)** – The New England District has designed and constructed a groundwater treatment facility at the Norwood PCB Superfund Site, decontaminated equipment from the Grant Gear Facility, and completed the restoration of Meadow Brook as well as overseeing other remedial actions accomplished by the Responsible Parties. *We have been operating the groundwater treatment facility at an annual cost of approximately \$500K. The plant was recently shut down due to significantly reduced contaminant levels in the groundwater. We will continue to monitor the groundwater over the next 1-2 years before a final decision on the use of the treatment plant is made.*

**GENERAL ELECTRIC/HOUSATONIC RIVER, PITTSFIELD (1st CD)** - The General Electric (GE) facility encompasses an area of approximately 300

acres located along the north bank of the Housatonic River in Pittsfield. Past operations by GE have caused significant contamination with PCBs and other compounds at this facility (soil, groundwater, buildings) and in the Housatonic River. In September 1998, EPA and GE achieved an Agreement in Principle for the environmental and economic restoration of Pittsfield and southern Berkshire Country.

Under the terms of the agreement, GE is responsible for clean up of the first half-mile of the river beginning at the GE facility, the GE plant site and other areas located in Pittsfield. GE clean up of the first half mile started in October 1999 and is expected to continue until May 2001. At the request of EPA, New England District is providing construction oversight and engineering assistance.

EPA has determined that a non-time critical removal action is needed in the 1.5-mile stretch of the Housatonic River extending from Lyman Street, Pittsfield (downstream limit of GE property), to the confluence of the West Branch of the Housatonic River. Roy F. Weston, under contract with the New England District, completed an Engineering Evaluation/Cost Analysis (EE/CA) for this stretch of river. The EE/CA evaluates alternatives to mitigate the human health and environmental threat posed by the existing high levels of PCBs and other hazardous substances in river sediments and banks. *EPA released the recommended removal alternative for public comment on July 14. The comment period extends to September 1. EPA plans to select a removal alternative by the end of September.*

The New England District awarded a Site Specific Environmental Remediation Contract for the purpose of accomplishing the removal action for the 1.5 mile reach of the river and to provide technical support to EPA in other areas as needed. It is a \$150 million, five year contract with a scope that includes investigations, design, construction, O&M, technical oversight and support. Contract award was made on April 7, 2000. The removal action is scheduled to start in June 2001 after completion of the first 1/2 mile removal action by GE.

EPA is continuing with studies and extensive modeling efforts for the next 20+ miles of the Housatonic River. A cleanup decision on the lower river will be made by EPA after completion of their studies and will be implemented by GE.

### **Construction Grants Program**

In 1978, the Environmental Protection Agency (EPA) and the Corps of Engineers (COE) entered into an interagency agreement (IAG) to establish the COE mission in the oversight responsibilities for the Construction Grants Program (CGP). Consequently, Regional EPA-COE Agreements have been executed by COE's divi-



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sions and or districts in accordance with the provisions and requirements of the IAG. Since 1978, New England Division/District has performed various forms of support for the CGP projects throughout New England. Presently, the New England District is monitoring construction progress at wastewater treatment plants and facilities in Massachusetts. Projects are located in the following communities: **Amesbury, Danvers, Pioneer**

**Valley Planning Commission (Chicopee, 2nd CD; Holyoke, 1st CD; South Hadley, 2nd CD; and Springfield, 2nd CD), Gardner (1st CD), Gloucester (6th CD), Lynn (6th CD), Marblehead (6th CD), New Bedford (4th CD), Newburyport (6th CD), Peabody (6th CD), Salem (6th CD), and the Massachusetts Water Resources Authority (8th, 9th, and 10th CDs).**

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## Formerly Utilized Site Remedial Action Program (FUSRAP)

**FORMER SHPACK LANDFILL SITE, NORTON/ATTLEBORO (4th CD)** - The Shpack site is an eight-acre abandoned domestic and industrial landfill which operated from 1946 to 1965. It is located along the Norton/Attleboro town boundary with approximately 5.5 acres in Norton and 2.5 acres in Attleboro. The Town of Norton and Attleboro Landfill, Inc., owns the property. The contaminants of concern include radioactive compounds, volatile organic compounds and heavy metals. The New England District's role at this site focuses on the radioactive contamination, which is believed to have come from Metals and Controls, Inc. (now Texas Instruments) which used the landfill to dispose of trash and other materials from 1957-1965. The site was also listed

on the National Priority List (NPL) in 1986, and EPA signed an Administrative Order by Consent with a Group of Settling Parties (which includes Texas Instruments).

The New England District has an initial site characterization effort underway that will then be followed by a more focused characterization effort with a subsequent decision as to whether a Non-Time Critical Removal Action should be pursued at this site. *High voltage transmission lines crossing the site will impact the work, and efforts are under way with National Grid (formerly NEES) to address the issue.* Our work is being coordinated with EPA/Responsible Party initiatives at the site.

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## Support to the Military

**MASSACHUSETTS MILITARY RESERVATION (10th CD)** - In August 1999, the Joint Program Office (JPO) at the Massachusetts Military Reservation (MMR) tasked New England District to provide MMR and surrounding communities on Upper Cape Cod with a three-million gallon per day drinking water supply system. Providing the drinking water system has been directed by the Deputy Under-Secretary of Defense for Environmental Security (DUSD-ES) because of the effect of contaminated groundwater in the area caused by past military activity on the reservation. The DUSD-ES has asked that the project be completed by July 2001.

The project consists of four interrelated activities: water source development, environmental documentation, design, and construction. In order to attempt to meet this very ambitious schedule, the initial phases of work must be performed concurrently. The project team, which includes our contractor Foster-Wheeler, is required to find the correct quantity of environmentally-safe water in accordance with Massachusetts Department of Envi-

ronmental Protection requirements, then design and construct a water distribution system to provide the drinking water.

*Work is underway on water source development, environmental documentation, and design efforts. New water source well pumping tests were completed in July, and reports are being prepared to send to the Massachusetts Department of Environmental Protection. An Environmental Assessment for the entire project was issued in July, and work on the final design is progressing on schedule. Construction of the water piping distribution system is expected to start this summer.*

*This past January, the Army National Guard asked the Corps to furnish a Contained Detonation Chamber in support of its upcoming ordnance and disposal efforts at MMR this summer. The chamber arrived at MMR in June and a demonstration was held on June 14th. The chamber will be used throughout this summer.*

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## Base Realignment and Closure

**U.S. ARMY MATERIALS TECHNOLOGY LABORATORY, WATERTOWN (8th CD)** - The New England District is providing remedial design, environmental remediation, cultural resources compliance, and real estate transfer activities associated with the closure of the Materials Technology Laboratory (MTL) in

Watertown. The closure was accomplished under the Base Closure and Realignment Act of 1988 (BRAC I). The New England District completed the MTL closure EIS process and the Record of Decision (ROD) was signed by the Assistant Secretary of the Army (Installations, Logistics and Environment) in 1991. The Army

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Material Command completed the disposal and reuse EIS in 1995 and that Record of Decision was signed in 1996. The Army identified three operating units at MTL for environmental evaluation and remediation - ground-water/soil, and the Charles River, which have the USEPA providing regulatory oversight, and indoor chemical cleanup, which is being regulated by the Massachusetts Department of Environmental Protection (MA DEP). The EPA announced the placement of MTL on the National Priorities List in 1994.

The New England District completed soil remediation of the 37-acre MTL parcel based on plans in the ROD, which called for soil excavation and offsite disposal/reuse. The \$2.5 million remediation contract was completed in 1997, with the final closeout report transmitted in 1998. EPA deleted this parcel from the NPL on November 23, 1999.

The 11-acre Charles River Park area has been separated out, and remediation initiated in 1997. This work was deferred while a Feasibility Study Addendum was prepared to evaluate options. The Army is proposing a change in excavation depth for EPA decision, and will continue with remediation in July 2000. In 1998, the New England District completed an environmental assessment for the disposal and reuse of this parcel.

The New England District has completed remediation of indoor building surfaces which includes removal of hazardous and toxic waste (HTW), shock sensitive materials, fume hoods, drains, and addressing lead paint and asbestos. The original \$5.5 million contract increased to \$9.3 million to address increases in scope of work.

The New England District completed its \$18 million effort for the removal of low-level radiological waste (LLRW) from the research reactor and disposed of these wastes in 1992 and completed demolition of the reactor shell in 1994. The Nuclear Regulatory Commission (NRC) issued an order in 1993 to terminate the reactor license. We also completed the removal and treatment of LLRW from nine research buildings and final termination surveys in 1995. The NRC initiated its surveys and review in 1995, and completed its process with the termination of the nuclear materials licenses in July 1997. The cost of the facility decommissioning was \$45 million.

The New England District has completed the application to nominate the MTL Historic District for inclusion on the National Register of Historic Places, and the application has been forwarded for approval. Our office has also performed intensive historical and archaeological investigations in 1995 and 1996 for the Watertown West archaeological site, finding artifacts dating back to 3000 BC. Our Real Estate Office has coordinated the McKinney Screening for Homeless Providers, which was completed in 1994, and the state/local screening,

which was completed in 1995. In 1998, the Army transferred two parcels: (1) 30 acres to the Watertown Arsenal Development Corporation by economic development conveyance, and (2) the Commander's Quarters and seven-acre park to the town of Watertown by public benefit conveyance.

The New England District is currently conducting feasibility studies for the Charles River Operating Unit (OU). The Army plans to develop a ROD, in concert with EPA and the Charles River Trustees, to implement a project which addresses CERCLA contaminants and contributes to the resources of the river.

**FORT DEVENS, AYER (5th CD)** - In 1991, the New England District (NAE) was requested by Headquarters, Forces Command, to prepare an Environmental Impact Statement (EIS) for the disposal and reuse of Fort Devens. In 1991, the New England District assumed the mission of implementing BRAC 91 related environmental restoration efforts at Fort Devens. Archaeological surveys were completed and the Draft EIS was filed with EPA in 1994. The Local/State Reuse Plan was approved by Harvard, Ayer and Shirley at town meetings in December 1994. The Final EIS was completed and a Record of Decision was signed in 1995. Cooperating agencies in the development of the EIS were the Federal Bureau of Prisons, U.S. Fish and Wildlife Service, the Massachusetts Government Land Bank, and the Joint Boards of Selectmen. In 1996, Fort Devens property (except for that being transferred to federal agencies) was conveyed by negotiated sale and a lease to the Massachusetts Government Land Bank.

Current activities include coordinating environmental restoration, disposal and reuse activities at the post. Fort Devens, a national priority list site, has over 300 potentially contaminated study areas. An Interagency Agreement between the Army and the Environmental Protection Agency's Region I was signed in 1991.

The District has worked closely with Fort Devens, the Army Environmental Center, and regulatory agencies in an effort to accelerate the investigation and cleanup process. Additional removal actions are complete. Numerous tank removal and remediation of numerous underground injection systems were completed in 1995. Additional contaminated soil and tank removal started in the spring of 1996 and was completed in the fall of 1998. The New England District completed a drum removal project in Mirror Lake in 1995 and remedial action for cap improvements to the Shepley's Hill Landfill last fall. The Barnum Road Maintenance Yard remediation was also completed in 1995. The Corps' Engineering and Support Center in Huntsville, through the New England District, performed unexploded ordnance clearance surveys in the summer and fall of 1995, and ordnance removal was completed in 1996.

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*The New England District is continuing to perform long-term monitoring of the Shepley's Hill Landfill, the South Post Impact Area and two former gas station sites. At Shepley's Landfill, the New England District completed the 60% extraction system design required by the Record of Decision and is currently performing additional investigations as a result of the five-year site review required by CERCLA. Environmental investigation work has been transferred to the New England District for the remaining 30 sites of concern at Devens.*

A Record of Decision (ROD) was signed in July 1999, recommending two options for disposal of material removed from landfill sites. The ROD provides for disposal at an on-site location, meeting all regulatory requirements and public concerns, as well as disposal at an off-site facility. *The Army gave its decision on June 28, 2000, to construct an on-site disposal facility based on best value. The New England District is utilizing its preplaced remedial contract with Stone & Webster of Boston, Mass., to perform this work. Construction of the landfill is expected to begin in late August and be completed by April 2003.*

A Record of Decision (ROD) for the removal of fuel oil contaminated soil at the former Elementary School site was signed in June 1999. *The facility will be used by the charter school. An interim action to remove contaminated soil was completed last fall. Long-term monitoring of the groundwater wells will be conducted by the New England District.*

An additional 835 acres of real estate was transferred from the Army to the Fish & Wildlife Service of the Interior Department in May 1999.

A Remedial Investigation/Feasibility Study (RI/FS) for a Perchloroethylene (PCE) plume under the former Moore Army Airfield (MAAF) is ongoing, with planned completion in the late fall of this year. The RI/FS includes a pilot study to gather necessary geophysical and technical information to determine an effective remedy. *The Record of Decision is expected to be completed by June 2001.*

**SUDBURY TRAINING ANNEX (5th CD)** - The U.S. Army, Forces Command (FORSCOM), requested that the New England District support the Base Realignment and Closure (BRAC) process at this facility. The New England District is currently executing work in the areas of environmental cleanup and real estate disposal.

The U.S. Army Environmental Center (AEC) initially performed a site investigation (SI) and supplemental site investigations (SSI) to fill data gaps at the Facility. The contaminated sites identified were: a landfill (Site A7) containing approximately two thousand (2,000) cubic yards of debris and waste; a clothing and material "Burn"

test site (A9) with approximately two hundred (200) cubic yards of soil contaminated with petroleum, oils, and lubricants (POL); and a small site (A4) containing approximately twenty (20) cubic yards of soil with elevated levels of metals. The Remedial Design (RD) details the removal of contaminants at various sites for encapsulation under an impermeable landfill cap at area A7. The RD was completed, and construction of the cap was completed in 1996. The New England District will monitor the effectiveness of the cap to reduce landfill leachate over the next five years in accordance with the approved long-term monitoring and maintenance plan. Biannual monitoring of 13 wells began in June 1997, and the latest round was completed in April 2000.

The New England District began the real estate screening process in 1995. All excess property at Sudbury will be transferred to federal agencies, most of the property to the U.S. Fish and Wildlife Service, with smaller parcels to Federal Emergency Management Agency and the U.S. Air Force.

Based on the recommendations of an Archival Search Report, the U.S. Army Engineering and Support Center completed an Ordnance and Explosives (OE) investigation in November 1997. The investigation found no ordnance, and thus a No Further Action decision was rendered. The Archival Search Report also indicated buildings which were used for explosives research. These buildings were investigated for explosive residue. *Results showed residual explosive contamination, and remediation was completed in the summer of 2000.*

An herbicide containing arsenic was applied to the fenceline, roads and railroad beds at the annex. A 1999 draft facility-wide Arsenic Investigation concluded that the arsenic in soil poses no significant risk to future users of the annex. The EPA, MADEP and the Fish and Wildlife Service have reviewed the report and are working with the Army to resolve any data gaps.

**HINGHAM RESERVE CENTER (10th CD)** - The U.S. Army, Forces Command (FORSCOM), requested that New England District support the Base Realignment and Closure (BRAC) process at this facility. The New England District is currently executing work in the areas of environmental cleanup, National Environmental Protection Act (NEPA) compliance, cultural and natural resources compliance, and real estate disposal.

The Commonwealth of Massachusetts, Department of Environmental Protection (MADEP) is the lead regulatory agency at this facility. The Department of the Army is proceeding with the environmental cleanup in accordance with the Massachusetts Contingency Plan (MCP). The environmental cleanup is a Phase II Comprehensive Site Assessment (CSA).



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Comments from the Massachusetts Department of Environmental Protection on the risk assessment and removal action results were received in 1998. Extensive

comments were also received from the Massachusetts Department of Environmental Management in 1999. Issues/comments are currently being addressed.

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## Work for Others

The Corps of Engineers has entered into an interagency agreement with the Department of Housing and Urban Development. The Corps is conduct physical inspections, contract administration reviews, reviews of drawings and specifications, and final inspections in **Cambridge (8th CD) and Boston (8th & 9th CDs)**.

**SUDBURY-ASSABET-CONCORD RIVER BASIN TMDLs (3rd, 5th & 7th CDs)** - *We have received the necessary funds from the state for Total Maximum Daily Land related work on the Sudbury and Concord rivers. A new contract for approximately \$100,000 is to be awarded for additional Assabet River work using these and previously collected funds.* It is expected that most of the work will be accomplished by modification to the Planning Assistance for the States contract with a firm

performing similar work on the Assabet River. Communities in the basin include Acton, Ashland, Berlin, Billerica, Bolton, Boxborough, Carlisle, Chelmsford, Concord, Framingham, Hopkington, Hudson, Lowell, Maynard, Marlborough, Natick, Northborough, Shrewsbury, Southborough, Sudbury, Stow, Wayland, and Westborough.

**NATIONAL PARK SERVICE, EASTHAM (10th CD)** - *A contract to construct a groundwater treatment plant with recovery and injection wells at the Nauset Ranger Station for the National Park Service was negotiated with an 8-A contractor, Coastal Environmental Corporation, in September 1999. Work began on the project in January 2000 and is expected to be ready for operation and maintenance by the National Park Service this summer.*

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## Regulatory Program

**STATISTICS** - *At the end of March, there were 182 active applications for regulated work in Massachusetts. During April, May, and June, 221 new applications were received. Final actions were taken on 247 applications, including ten individual permits, 102 general permits, 17 not required, and no denials. The balance at the end of June was 156 active files.* The Corps routinely processes over 95% of all permit actions in less than 60 days.

**PROGRAMMATIC GENERAL PERMIT** - The New England District has comprehensive Programmatic General Permits (PGPs) in place in each of the six New England states covering work with minimal impact on the aquatic environment. Up to 98% of all permits issued in New England are PGPs. The PGPs are based on the state thresholds for most categories of environmental impacts, and applicants generally need only file with the state. The federal screening is virtually transparent to applicants, and the PGP approval, in most of the states, is either included in the state approval letter or mailed simultaneously. Applications appropriately covered under the PGPs are generally approved in under 30 days. Applicants have commented favorably about the simplicity, predictability and efficiency of the PGPs. The Massachusetts PGP was reissued on January 11, 2000, for another five years.

**NEW BEDFORD AIRPORT EXPANSION PROJECT (4th CD)**- The City of New Bedford, with funding from the Massachusetts Aeronautics Commission and the Federal Aviation Administration (FAA), proposes to develop a runway extension and regional air cargo facility at the New Bedford Regional Airport. The purpose of the

project is to provide increased cargo and passenger service in southeastern Massachusetts, to enhance the efficiency of state and national air transportation systems, and to promote regional economic development. The project may affect up to an estimated 238 acres of wetland (58 acres of fill and 180 acres of vegetative alteration). These numbers are expected to decrease as the study progresses. Some amount of tree clearing would be required with or without the expansion to meet current FAA safety requirements. We are coordinating with the City of New Bedford Airport Commission, FAA and their contractors and consultants. Preapplication coordination has been and will continue to be extensive, as we continue to participate in the FAA's preparation of an Environmental Impact Statement. They are now completing the Purpose and Need Statement. We will be working closely with them as they develop the alternatives analysis to ensure that we can use this for our 404(b)1 guidelines alternatives analysis which requires that we permit only the least environmentally damaging practicable alternative.

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (GREENBUSH LINE) (10th CD)** - The Massachusetts Bay Transportation Authority (MBTA) has requested a permit to place fill within a total of 5.11 acres of wetlands and waterways for restoration of commuter rail service on the Greenbush branch of the Old Colony Railroad line in the Towns of Braintree, Weymouth, Hingham, Cohasset, and Scituate. The Corps conducted a public hearing on August 14, 1997, to solicit public comments and input about the proposal. Numerous concerns were raised concerning potential alternative transportation systems, the project's potential ef-

fects on air quality, noise, public safety, traffic, historic resources, flood plains, wetlands, and, in general, the needs and welfare of the people. The MBTA has indicated that it would submit a revised application providing additional information and project modifications. Changes to the locations of station sites and work within Town River in Hingham are anticipated. After submittal of the revised permit application, a new notice will be issued to inform the public of these changes. We are

also continuing to coordinate with MBTA to complete our review under Section 106 of the National Historic Preservation Act. *The consultation meetings will occur through August 2000 with the consulting parties. Public information meetings in the affected towns were held in the spring and summer of 2000. The expected result of the Section 106 consultation meetings is a Memorandum of Agreement which will allow the Corps to then proceed to make a permit decision.*

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## Flood Control Projects

The New England District has constructed 11 flood control dams and one hurricane protection project in Massachusetts. Information on each is provided below.

**BARRE FALLS DAM (1st CD)**, on the Ware River in Barre, was completed in 1958 at a cost of \$2 million. The 885-foot-long and 62-foot-high dam can impound a lake which can store 7.8 billion gallons of water. Barre Falls has prevented \$23.2 million in flood damages. Over 50,000 annual visitors enjoy picnicking, hiking, fishing and hunting at Barre Falls Dam.

**BIRCH HILL DAM (1st CD)** is situated on the Millers River in Royalston. Completed in 1942 at a cost of \$4.8 million, the 1,400-foot-long, 56-foot-high dam can store 16.2 billion gallons of water. To date, damages amounting to more than \$58.7 million have been prevented. Birch Hill offers many fine recreational opportunities. The Lake Denison Recreational Area, managed by the Massachusetts Division of Forests and Parks, provides camping, swimming, picnicking, boating, and fishing. Much of the remaining reservoir area is managed by the Massachusetts Division of Fisheries and Wildlife as part of the Birch Hill Wildlife Management Area. Popular activities include hiking, hunting, fishing, mountain biking, and snowmobiling in season. The Birch Hill Dam and reservoir area attracts more than 1.3 million visitors annually.

**BUFFUMVILLE DAM (2nd CD)** on the Little River in Oxford was completed in 1958 at a cost of \$3 million. The 12,700 acre feet of storage at Buffumville is equal to 3.9 billion gallons of water and is impounded by a 3,255-foot-long, 66-foot-high earthen dam. More than \$54.6 million in damages have been prevented by Buffumville Dam. Picnicking, swimming, boating, fishing, hunting, disc (Frisbee) golf and sight-seeing attract more than 63,000 visitors annually. *For more information or a list of events, Buffumville Lake's website is: <http://www.nae.usace.army.mil/recreati/buffv.htm>.*

**CONANT BROOK DAM (2nd CD)**, on the brook of the same name in Monson, can store 1.2 billion gallons of water behind the 1,050-foot-long, 85-foot-high impoundment. Completed in 1966 at a cost of \$3 million, the project annually attracts around 20,000 visitors to its

scenic trails for hiking, horseback riding, and cross-country skiing and for its fine trout fishing.

**EAST BRIMFIELD DAM (2nd CD)** in Sturbridge was constructed at a cost of \$7 million. The 520-foot-long, 55-foot-high dam can impound a 29,900-acre-foot reservoir which, is equivalent to 9.7 billion gallons of water. Since it was placed in operation in 1960, it has prevented damages of \$45 million. The reservoir area offers fine recreational opportunities, including swimming, picnicking, fishing, hunting, canoeing, boating, and nature study, and attracts more than 124,000 visitors annually.

**HODGES VILLAGE DAM (2nd CD)**, across the French River in Oxford, was constructed at a cost of \$4.4 million. The 2,140-foot-long, 55-foot-high dam can impound a 12,000-acre-foot reservoir which is equivalent to 4.2 billion gallons of water. Since it was placed in operation in 1959, it has prevented damages of \$52 million. The reservoir area offers fine recreational opportunities, including picnicking, fishing, hunting, mountain bike and horseback riding, and nature study to the more than 28,000 visitors it welcomes each year. *For more information or a list of events, Hodges Village Dam's website is: <http://www.nae.usace.mil/recreati/hodvd.htm>.*

**KNIGHTVILLE DAM (1st CD)**, on the Westfield River in Huntington, was constructed at a cost of \$3.4 million. The 1,200-foot-long, 160-foot-high dam can impound a 49,000-acre-foot reservoir (equivalent to 15.8 billion gallons of water). Since its construction in 1941, it has prevented damages of \$143.4 million. More than 35,000 visitors enjoy the variety of recreational pursuits available at Knightville, including picnicking, hiking, fishing, hunting, group camping, and snowmobiling.

**LITTLEVILLE DAM (1st CD)**, on the Middle Branch of the Westfield River in Huntington and Chester, is 1,360 feet long, 164 feet high and cost \$7 million to construct. Its lake can hold a 23,000-acre-foot or 7.5 billion gallon reservoir. It has prevented damages totalling \$54.1 million since it was placed in operation in 1965. The reservoir area offers many fine recreational opportunities, including picnicking, fishing, hunting, canoeing, boating and nature study, and attracts more than 45,000 visitors annually.

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**TULLY DAM (1st CD)**, situated on the East Branch of the Tully River in Royalston, is 1,570 feet long and 62 feet high. Completed in 1949 at a cost of \$1.6 million, the dam has a reservoir storage capacity of 7.1 billion gallons of water. Tully Dam prevented damages of \$21.7 million. Nearly 30,000 visitors annually enjoy picnicking, hiking, boating, fishing, and hunting at Tully Lake.

**WEST HILL DAM (2nd CD)**, on the West River in Uxbridge, was completed in 1961 at a cost of \$2.3 million. The 2,400-foot-long, 51-foot-high dam can impound a 12,400-acre-foot lake capable of storing four billion gallons of water. It has prevented damages of more than \$30 million. More than 52,000 annual visitors enjoy picnicking, swimming, hiking, fishing and hunting at the 1,401 acre facility.

**WESTVILLE DAM (2nd CD)** in Southbridge and Sturbridge is 560 feet long and 78 feet high and cost \$5.7

million to construct. Its lake can store an 11,100 acre-foot reservoir, which amounts to 3.6 billion gallons of water. It has prevented damages totaling \$22.9 million since it was placed in operation in 1962. The reservoir area offers fine recreational opportunities, including picnicking, fishing, hunting, canoeing, boating, and nature study and annually attracts more than 55,000 visitors.

The **NEW BEDFORD-FAIRHAVEN-ACUSHNET HURRICANE PROTECTION PROJECT (4th CD)** was completed in 1966 at a cost of \$18.6 million and provides a gated barrier across New Bedford-Fairhaven Harbor and supplementary dikes in the Clarks Cove area of New Bedford and Fairhaven. The twin sector gates can seal the 150-foot-wide navigation opening in 12 minutes. This barrier affords tidal-flood protection to an area of about 1,400 acres. To date, \$16.9 million in damages have been prevented.

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## Federal Flood Control Project Maintenance

The current program to maintain flood control projects in Massachusetts includes one large contract (see Hodges Village Dam below), as well as a number of smaller activities.

**HODGES VILLAGE DAM, OXFORD (2nd CD)** - Hodges Village Dam, situated on the French River in Oxford, was placed in operation in 1959. The 2,140-foot-long, 54-foot-high earthfill dam can impound a 13,000-acre-foot reservoir which is equivalent to 4.2 billion gallons of water. The project also includes four earthfill dikes totalling 2,600 feet in length with a maximum height of 30 feet. To date, it has prevented damages of \$41.3 million by reducing flood flows on the French River in Oxford, Webster and Dudley, Mass., and Thompson, Conn., and contributing to flood prevent on the Quinebaug River in Putnam, Conn., and other downstream communities.

The dam embankment was constructed with no impervious core or seepage control features other than a partial downstream rockfill zone. Seepage through the embankment and foundation has occurred during operation of the dam in flood events in 1968, 1987, and 1993. Corrective measures were constructed after each event.

An investigation was undertaken in late 1993 to evaluate the dam and to develop a permanent solution to the recurring seepage and erosion problems. These studies concluded that the dam embankment and foundation, including the 1968 and 1990 toe drains and relief wells, were insufficient to effectively prevent the development of adverse seepage conditions when the reservoir level exceeds the 25-foot pool stage. The solution involved construction of a concrete cutoff wall along the full 2,140-foot-length of the dam embankment and Dike 1 and work

at Dike 2 and along the adjacent natural ridge to Dike 3 consisting of construction of a gravel and stone drainage blanket on the landside slopes to control potential seepage, and placement of a semi-pervious spoil fill blanket on the reservoir slopes to reduce potential seepage through the natural ridge. The construction cost \$16.3 million and was completed in 1999.

**WEST HILL DAM, UXBRIDGE (2nd CD)** - West Hill Dam is situated on the West River in Uxbridge, Massachusetts. Constructed at a cost of \$2.3 million, the structure was placed in operation in 1961. The 2,400 foot-long dam can impound a 12,440-acre-foot reservoir which is equivalent to 4 billion gallons of water or 8.3 inches of runoff from the upstream 27.9 square mile drainage area. To date, it has prevented damages of over \$30 million.

The dam embankment was constructed of random and impervious fill with a limited upstream impervious blanket and without any significant foundation seepage control features. Excessive seepage through the foundation materials has occurred during operation of the project for flood events in 1979, 1987 and 1998. These flood events represent estimated frequencies of 5 percent (20 year), 3 percent (33 year) and 40 to 50 percent (2 to 3 year) respectively. Corrective measures following the first two events included installation of a shallow downstream toe drain in 1979, and extension of the toe drain in 1989. Additional, piezometers were installed after the 1998 event. Restricted operational flood pool levels have been imposed in order to maintain the project's overall safety. Preliminary project review was undertaken in late 1998 to assess the condition of the dam and to develop a plan for detailed investigations into the recurring seepage and erosion problems.



Drawing on the dams past performance, borings, and piezometer data, it was concluded that the dam embankment and foundation, including the 1979 and 1989 toe drains are insufficient to effectively prevent the development of adverse seepage conditions when the reservoir level exceeds a 15-foot pool stage (about a 3 year flood event). The proposed solution involves construction of a concrete panel cut-off wall tied into bedrock along the full length of the dam embankment. This wall will safely maintain future flood storage pools and prevent the development of detrimental seepage conditions, including piping, boils, and internal erosion problems.

The dam embankment will be lowered ten feet over its entire length to provide sufficient staging area for the construction work. Material removed during the lower-

ing of the dam embankment will be stockpiled on site, and it will be used to rebuild the embankment to its original height after construction of the concrete cut-off wall is complete. This construction will require acquisition of adjacent real estate in either fee or easement for temporary construction easements and/or project construction. During the remediation efforts, West Hill Dam will remain partially operational to store water in the event of a major flood.

A Major Rehabilitation Report and Dam Safety Assurance Report was completed in January 1999. Design and development of plans and specifications for the rehabilitation effort initiated in October 1999 and is scheduled for completion in September 2000. Construction would be scheduled for FY 01.

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## Recreation and Natural Resources Management

The Corps of Engineers, working in cooperation with agencies of the Commonwealth of Massachusetts, provides diverse quality outdoor recreational opportunity on each of the 11 flood control reservoirs, the Cape Cod Canal, and the Charles River Natural Valley Storage Area located within the Commonwealth. Recreational facilities at all projects are generally open for the May 15 to September 15 season.

**BARRE FALLS DAM, BARRE (1st CD)**— *The Corps of Engineers hosted the annual Earth Day celebration in cooperation with the Town of Hubbardston on Saturday, May 6, 2000. Events for the entire family included entertainment, games and exhibits. More than 450 people attended the celebration.*

**BUFFUMVILLE DAM, OXFORD (2nd CD)** - *The Chief of Engineers has selected Buffumville Lake as one of two recipients for the U.S. Army Corps of Engineers Natural Resources Management Project of the Year for Fiscal Year 2000. The site was chosen for the award "...because of exceptional achievement in natural resources management, efficiency in the use of financial and personnel resources, success in interagency programs, initiative in public involvement and effectiveness in visitor safety."*

**KNIGHTVILLE DAM, CHESTERFIELD AND HUNTINGTON (1st CD)** - The Indian Hollow Campground is

available to organized groups on a reservation basis. There are two group camping loops at the campground, each accommodating 75 people. One loop is \$50 per night, and both loops are \$100 per night. The campground is open from May 12 to September 10, 2000. Reservations for the Indian Hollow Campground can be made through the National Recreation Reservation System by calling toll free 877-444-6777 or on the web at [www.ReserveUSA.com](http://www.ReserveUSA.com). For more information, call Knightville Dam (413-667-3430) or the Lower Connecticut River Basin Office (978-249-2547).

**TULLY LAKE, ROYALSTON (1st CD)** - *The Tully Lake Campground is open daily from May 26 to September 4, 2000 and will go back to weekends only from September 8 through October 9, 2000. The Trustees of Reservations manages the campground under an agreement with the Corps of Engineers. The Trustees of Reservations, the nation's oldest land trust, manages several adjacent properties including Doane's Falls, Spirit Falls, and Jacob's Ridge. Improvements to the campground by The Trustees for the 2000 recreation season include installation of picnic tables at each site, a volleyball/play field area and canoe and kayak rentals. Tully Campground has 30 walk-in campsites, many located on the water, with a central restroom building containing showers and flush toilets. For campground information or to make a reservation, call The Trustees at (978) 840-4446.*

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## Special Studies

**BIRCH HILL DAM, TEMPLETON, WINCHENDON, AND ROYALSTON (1st CD)** - Polychlorinated Biphenyls (PCBs) were discovered in May 1987 in tissue samples taken from fish caught in the Otter and Millers rivers. The Corps of Engineers is working in cooperation with the U.S. Environmental Protection Agency, the U.S. Geological Survey, the Massachusetts Depart-

ment of Environmental Protection, and the Commonwealth of Massachusetts Executive Office of Environmental Affairs' Millers River Team Initiative to determine the extent of the problem and possible source(s). A Phase I characterization was completed in 1992. *A final Phase II characterization report, along with a human health and ecological risk assessment, to*

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*evaluate the level of risk that may exist on Birch Hill property was completed in July 2000.*

**BLACKSTONE RIVER (3rd CD)** - A 12-month reconnaissance investigation to assess environmental restoration of the Blackstone River was completed in 1997. *The report noted the complex interrelationship of the basin's many problems and recommended a comprehensive (rather than a fragmented) planning approach be applied.* The \$400,000 federally-funded reconnaissance study focused on ecological needs in the Blackstone River watershed. The study identified the federal interest in environmental restoration plans for the Blackstone River, determined the costs of constructing the proposed actions and assessed the level of interest of potential cost-sharing sponsors for further, more detailed, investigations. The study built on work identified in the Corps 1994 Planning Assistance to States Program "Blackstone River Restoration Study" report, as well as that by the U.S. Environmental Protection Agency and others as part of the Blackstone River Initiative. The report was sent to the potential sponsors (Massachusetts and Rhode Island). We signed a Feasibility Cost Share Agreement in June 1999 with the Commonwealth of Massachusetts, with \$290,000 of environmental inventorying and ecological assessment and \$38,000 of geotechnical contracts awarded to date. *Another major water quality sampling contract is expected to be awarded in the fall of 2000.* The ecological hazards of the river's sediments are being definitively addressed at present. Due to funding problems, the State of Rhode Island is not participating in the Feasibility Study at this time.

**BLACKWATER RIVER, SALISBURY (6th CD)** - The New England District is conducting studies to determine the feasibility of providing local flood protection along the Blackwater River in Salisbury. Preliminary studies indicated that flood control measures would be economically justified, but further detailed studies are necessary to fully evaluate flood control alternatives and impacts. A feasibility cost-sharing agreement outlining the scope and cost of these additional studies was prepared and executed between the Commonwealth and the Corps on January 4, 1999. *Feasibility studies are underway, with the draft feasibility report and environmental assessment scheduled for completion in the fall of 2000.*

**BROAD MEADOWS SALT MARSH RESTORATION QUINCY, MASSACHUSETTS (10th CD)** - The New England District received approval in March 1999 to initiate a feasibility study for the restoration of 37 acres of saltmarsh habitat, 29 acres of recreational grass/open space, and 12 acres of saltwater channels and pools at Broad Meadows Marsh. Broad Meadows Marsh is owned by the City of Quincy. The restoration would provide meaningful and productive ecological improve-

ments to a degraded marsh that can support increases in marine life populations. The study is scheduled for completion in the fall of 2000.

**COASTAL AMERICA (10th CD)** - The New England District continues to chair the Northeast Regional Implementation Team (NERIT) for Coastal America. NERIT has focused its efforts on habitat restoration and, in particular, restoration of tidally constricted salt marshes. The Corps has assisted these efforts at several sites throughout the state. The Sagamore Marsh Restoration project, noted below, is an example of current Corps assistance. The Cape Cod transportation corridor has also been evaluated for tidally constricted salt marshes. An interagency Memorandum of Understanding has been signed to formally document the Coastal America partners' commitment to wetlands restoration, with Corps staff serving on the advisory committee of the Massachusetts Wetlands Restoration and Banking Program.

**GULF OF MAINE INITIATIVE** - The New England District is a member of the Gulf of Maine working group, providing this joint U.S./Canadian committee with water resource planning expertise. Technical support in applications of sediment chemical mapping for Boston Harbor is being provided. New England District staff members are participating in Gulf of Maine Workshops, and these workgroups are discussing ways in which the U.S. and Canadian can partner through the Gulf of Maine program.

**LOWELL CANALS (5th CD)** - The Corps is performing the preliminary work needed to develop a sediment sampling plan for the approximately six miles of canals in Lowell. The work, done for the U.S. Environmental Protection Agency, involved determining where historic releases of contamination to the environment have been made and what has been sampled to date. The report was forwarded to EPA in February 2000.

**MANHAN DAM AQUATIC ECOSYSTEM RESTORATION STUDY (1st CD)** - Currently, the Manhan Dam on the Manhan River in Easthampton, MA, blocks the upstream migration of anadromous fish species specifically Atlantic Salmon. There are many tributaries flowing into the Manhan River above the project dam. Generally the tributaries are clear, cold, fast flowing, shady, and with no visible algae growth. It appears that the tributaries can provide very good fish spawning habitat. Currently, Atlantic Salmon are regularly stocked in the areas upstream from the dam. Also, the presence of other anadromous species (i.e. shad, blueback herring) in the pools below the dam indicates that if fish passage was provided, it would be utilized by these species as well as salmon to access the spawning and nursery habitat upstream from the dam.

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The study will be conducted under the Corps "Aquatic Ecosystem Restoration Program" Section 206 of the Water Resources Development Act of 1996. A Preliminary Restoration Plan (PRP) determined that a feasibility level study of a potential project is warranted. The feasibility study was initiated in April 2000, with completion slated for spring 2001.

**MUDDY RIVER FLOOD DAMAGE REDUCTION AND ENVIRONMENTAL RESTORATION INVESTIGATION (4th, 8th and 9th CDs)** - In October of 1996, the Boston area received approximately 8-10 inches of rain resulting in severe flooding along and adjacent to the Muddy River. The majority of the damages were to residences and businesses along the river and to the underground Massachusetts Bay Transit Authority (MBTA) rail system in nearby Kenmore Square. Severe flooding also occurred in several tributary areas, particularly Stony Brook. As a result of this event, the City of Boston Parks and Recreation Department, working with the Commonwealth of Massachusetts and FEMA, developed and proposed the City's Master Plan. This plan is presented in the City's Environmental Notification Form, "The Emerald Necklace Environmental Improvements Master Plan, Phase I Muddy River Flood Control, Water Quality and Habitat Enhancement", dated January 1999. The objectives of the plan are to increase flood control, improve water quality and enhance aquatic/riparian habitat within the Muddy River by dredging accumulated sediment. The plan calls for deepening the Muddy River system, upgrading flood control, removing nuisance vegetation, improving fisheries/wildlife habitat and water quality, and promoting and enhancing recreational use of Emerald Necklace parklands. The project also includes bank stabilization and improvements to restrictive drainage culverts.

The Water Resources Development Act of 1999 authorized the Corps to evaluate the City's plan and "determine whether the plans outlined in the study for flood control, water quality, habitat enhancement, and other improvements to the Muddy River in Brookline and Boston, Massachusetts, are cost-effective, technically sound, environmentally acceptable and in the Federal interest." Language contained in the House Report accompanying the Fiscal Year 2000 Energy and Water Development Appropriations Act "directs the Corps to proceed with the Muddy River, Boston, Massachusetts, project, subject to a determination that the project satisfies all Section 205 program requirements."

The Section 205 (Flood Control) program authorizes the Corps to construct justified flood damage reduction project with a federal-funding limit of \$7 million. Projects constructed under the Section 205 program are cost shared with a local sponsor, 65 percent federal and 35 percent nonfederal. The cost of studies required to

determine federal interest are cost shared 50/50 with the nonfederal sponsor after the first \$100,000. The first \$100,000 is 100 percent federally funded.

*Using funds provided under the Section 205 program, the New England District evaluated the Boston Parks and Recreation Department's Phase I Master plan for the Muddy River. The work built upon previous studies done by the Corps in 1992, 1997 and 1998, and included an assessment of all project benefits. These benefits included flood control, environmental restoration, recreation enhancement, historic restoration, and water quality and aesthetic improvement. The investigation was initiated in December 1999, and a cost sharing agreement for the \$300,000 study was executed with the Massachusetts Department of Environmental Management in March 2000.*

*The District's Draft Evaluation Report was completed on June 30, 2000. Copies of the report have been provided to the Corps North Atlantic Division and Washington headquarters for review, and to the Congressional Delegation, Commonwealth of Massachusetts, City of Boston and Town of Brookline for their information. The report determined that the benefits of the city's Master Plan exceed its costs, but further study is necessary to refine and optimize the various components of the plan.*

**MUDDY RIVER (4th, 8th and 9th CDs)** - A Feasibility Cost Sharing Agreement (FCSA) for an investigation examining poor water quality and aquatic habitat issues in the Muddy River was finalized between the Commonwealth and the Corps in July 1994. The \$450,000 feasibility study, cost-shared equally between the Commonwealth and the Corps, was submitted for Corps headquarters and for resource agency review in 1996. Based on agency comments and Headquarters review, additional study was required to refine the recommended plan. The FCSA was amended in 1997 to incorporate the additional work. This increased the total study cost to \$530,000. Work on this additional effort was completed and a revised report issued for public review in 1998. As part of this review process, a public meeting was held. The Commonwealth of Massachusetts has asked to delay its decision concerning implementation of the recommended plan pending further study of other water resource related needs, particularly flood control.

**NATIONAL ESTUARY PROGRAM** - The District is currently supporting implementation of the comprehensive conservation and restoration plans of the Massachusetts/Cape Cod Bays and the Buzzards Bay National Estuary Programs (NEP). Activities include attendance at committee meetings and transfer of our data to the NEP Geographic Information Systems. Additionally, we are working on numerous habitat restoration initiatives.



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**NEPONSET RIVER, BOSTON/MILTON (9th CD)** -The Massachusetts Executive Office of Environmental Affairs (EOEA) requested that the Corps of Engineers conduct a study of the Neponset River to explore the possibilities of restoring a degraded aquatic ecosystem to a less degraded, more natural condition. This work will be conducted under the Corps "Aquatic Ecosystem Restoration Program" Section 206 of the Water Resources Development Act of 1996. The project will have a local cost-share of 35%, with the balance being Federally funded.

This study will investigate complete removal, partial breaching, or installation of a fish passage structure at the Walter Baker and Tilestone & Hollingsworth Dams along the river. A Preliminary Restoration Plan (PRP) determined that a feasibility level study of a potential project is warranted. We have received the necessary funding to initiate the Feasibility Analysis phase for this project. We anticipate completion of the Feasibility Analysis by the summer of 2001.

**PARKER POND, GARDNER (1st CD)** – A report on alternatives for aquatic habitat restoration is being prepared by New England District. Sedimentation and encroaching vegetation has reduced and degraded fish habitat in this 38-acre pond. *A preliminary draft report will be completed in August 2000.*

**SAGAMORE SALT MARSH RESTORATION PROJECT (10th CD)** - The Sagamore Marsh, situated on the north side of the Cape Cod Canal in the towns of Bourne and Sandwich, was identified as a high priority

salt marsh restoration site. The project will restore 50 acres of saltmarsh. The nonfederal sponsor is the Massachusetts Department of Environmental Management (MA DEM). A construction contract has been awarded, and restoration is scheduled for a December 2000 completion. The project also includes a five-year long-term ecology monitoring of the marsh. A groundbreaking ceremony for the \$2.4 million project was held on April 10, 2000.

**YARMOUTH RUN POND COASTAL ECOSYSTEM RESTORATION STUDY (10th CD)** -The Run Pond restoration site is located on Nantucket Sound in Yarmouth, MA. Currently there is limited tidal exchange at the site. This pond experiences extensive algal blooms each summer and the surrounding salt marsh shows signs of degradation as evidenced by the invasion of Phragmites. Improvement to the salt pond and salt marsh will result in an increased finfish and shellfish population, and higher quality salt marsh vegetation.

Tidal flows to the pond are controlled by about an 800-foot culvert. The study will examine the culvert to determine it's capacity and establish if improvements are warranted. The study will be conducted under the Corps "Aquatic Ecosystem Restoration Program" Section 206 of the Water Resources Development Act of 1996. A Preliminary Restoration Plan (PRP) determined that a feasibility level study of a potential project is warranted. The feasibility study was initiated in March 2000. The feasibility phase will be 12 months to the draft report.

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